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PTO/SB/05 (11-00)
Approved for use through 10/31/2002. OMB 0651-0032
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. 1.53(b))

Attorney Docket No.	04770.00018
First Inventor	Miika SILFVERBERG et al.
Title	Zooming And Panning Content On A Display Screen
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
   (Submit an original and a duplicate for fee processing)
2. ☐ Applicant claims small entity status.
   See 37 CFR 1.27.
3. ☒ Specification   [Total Pages 15]
   (preferred arrangement set forth below)
   - Descriptive title of the Invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to sequence listing, a table,
     or a computer program listing appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure

4. ☒ Drawing(s) *(35 U.S.C.113)* [Total Sheets 4]
5. Oath or Declaration   [Total Pages 2]
   a. ☒ Newly executed (original or copy)
   b. ☐ Copy from a prior application (37 CFR 1.63 (d))
      (for a continuation/divisional with Box 18 completed)
      i. ☐ DELETION OF INVENTOR(S)
         Signed statement attached deleting inventor(s)
         named in the prior application, see 37 CFR
         1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

ADDRESS TO:
Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

7. ☐ CD-ROM or CD-R in duplicate, large table or
     Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission
     (if applicable, all necessary)
   a. ☐ Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ paper
   c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATIONS PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 C.F.R.§3.73(b) Statement   ☐ Power of
    (when there is an assignee)   Attorney
11. ☐ English Translation Document *(if applicable)*
12. ☐ Information Disclosure   ☐ Copies of IDS
    Statement (IDS)/PTO-1449   Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
    (Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
    (if foreign priority is claimed)
16. ☐ Request and Certification under 35 U.S.C. 122
    (b)(2)(B)(i). Applicant must attach form PTO/SB/35
    or its equivalent.
17. ☐ Other: _____

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:*

☐ Continuation   ☐ Divisional   ☐ Continuation-in-part (CIP)   of prior application No: _____ / _____

Prior application information: Examiner _____   Group / Art Unit: _____

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying or divisional application and is hereby incorporated by reference. The incorporation **can only** be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

☒ Customer Number or Bar Code Label   22907   or ☐ Correspondence address below
(Insert Customer No. or Attach bar code label here)

Name	
Address	

City		State		Zip Code	
Country		Telephone		Fax	

Name (Print/Type)	Bradley C. Wright	Registration No. (Attorney/Agent)	38,061
Signature	*[signature]*	Date	September 4, 2001

PTO/SB/17 (11-00)
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FEE TRANSMITTAL
for FY 2001

Patent fees are subject to annual revision

Complete if Known	
Application Number	TBA
Filing Date	September 4, 2001
First Named Inventor	Milka SILFVERBERG et al
Examiner Name	TBA
Group / Art Unit	TBA

TOTAL AMOUNT OF PAYMENT	($) 830	Attorney Docket No	04770 00018

METHOD OF PAYMENT (check one)

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to

Deposit Account Number: 19-0733

Deposit Account Name: Banner & Witcoff, Ltd

☒ Charge Any Additional Fee Required Under 37 CFR 1 16 and 1 17

☐ Applicant claims small entity status See 37 CFR 1 27

2. ☐ Payment Enclosed

☐ Check   ☐ Credit card   ☐ Money Order   ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Entity Fee ($)	Small Entity Fee Code	Entity Fee ($)	Fee Description	Fee Paid
101	710	201	355	Utility filing fee	710
106	320	206	160	Design filing fee	
107	490	207	245	Plant filing fee	
108	710	208	355	Reissue filing fee	
114	150	214	75	Provisional filling fee	

SUBTOTAL (1) ($) 710

2. EXTRA CLAIM FEES

		Extra Claims		Fee from below		Fee Paid
Total Claims	20	-20** =	0	X	18	=	0
Independent Claims	4	-3** =	1	X	80	=	80
Multiple Dependent	0			X	270	=	0

Large Entity Fee Code	Entity Fee ($)	Small Entity Fee Code	Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	80	202	40	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	80	209	40	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 80

**or number previously paid, if greater, For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Fee Code	Large Entity Fee ($)	Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	390	216	195	Extension for reply within second month	
117	890	217	445	Extension for reply within third month	
118	1,390	218	695	Extension for reply within fourth month	
128	1,890	228	945	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive – unavoidable	
141	1,240	241	620	Petition to revive – unintentional	
142	1,240	242	620	Utility issue fee (or reissue)	
143	440	243	220	Design issue fee	
144	600	244	300	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	130	123	130	Petitions related to provisional applications	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	40
146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	710	249	355	For each additional invention to be examined (37 CFR § 1 129(b))	
179	710	279	355	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid   **SUBTOTAL (3)** ($) 40

SUBMITTED BY

		Complete *(if applicable)*	
Name (Print/Type)	Bradley C Wright	Registration No Attorney/Agent	38,061
		Telephone	202-508-9100
Signature		Date	September 4, 2001
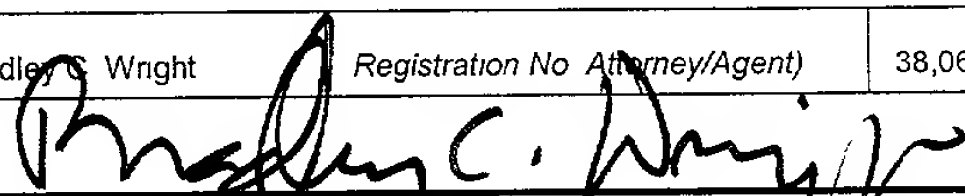
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

ZOOMING AND PANNING CONTENT ON A DISPLAY SCREEN

FIELD OF THE INVENTION

[01]   The invention relates to data processing devices. More specifically, the invention relates to a method and system for manipulating documents on data processing devices using panning and zooming controls.

BACKGROUND OF THE INVENTION

[02]   Handheld devices are increasingly being used to manipulate larger and larger data files. For instance, Internet web pages, maps, word processing documents, spreadsheets, and the like are being used more frequently on handheld devices and other devices whose displays are smaller than a conventional desktop monitor. The smaller display size of these devices makes user interaction cumbersome and slow because the user is required to perform lots of scrolling in order to view the complete document; i.e. only a portion of the entire document may be viewed on the smaller display screen at any given time. Additionally, users are more likely to get disoriented within the document because they may forget which subsection of the entire document they are currently viewing.

[03]   Similar problems exist on conventional desktop and laptop computers (PCs), although not to the same degree as with handheld devices because the display screen size is typically larger on conventional computers. Several known solutions exist for the above-described problems with respect to conventional desktop and laptop computers. One such solution is the use of scrollbars. That is, when there is more data than can be displayed on a single display screen, scrollbars can be used to move window content up and down or left and right, or both. However, scrollbars are slow and also require precise pointing and interaction by a user. This can interrupt the natural task flow with which the user was previously engaged. In addition, the precision required to scroll on a small-screen device is often difficult to achieve due to the limited size of the display.

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[04]   Another known solution for conventional PCs is to use a mouse adapted with a roller wheel or trackball, also referred to as a wheel-mouse or trackpoint-mouse. Microsoft® and IBM® mice devices allow scrolling by placing a wheel or a trackball on the mouse. These methods can be inefficient, because the same hand is used for pointing and scrolling, and zooming is not supported. In addition, a wheel-mouse may allow only vertical scrolling, depending on its configuration.

[05]   Other known solutions are application specific. That is, many applications allow various levels of zoom control. However, zooming typically takes place in steps, such that there are regular zoom levels. The applications do not smoothly zoom in and out of a document. When these applications zoom in, especially when a big zoom "step" is taken, the user often gets lost because it is difficult to judge where in the document the zooming took place. Zoom stepping is typically performed using a combo-box or complex set of keystrokes (e.g. ctrl +, ctrl -), which also breaks the user's natural task flow.

[06]   A known smooth zooming application is Pad++, available on the Internet at the web site http://hci.ucsd.edu/pad++/. However, Pad++ software only allows a user to use one hand for both zooming and panning because it ties zooming and panning operations to a computer mouse. This makes it complex and difficult to master, much less to perform both at the same time. One hand is overloaded with complex functions, while the other hand remains idle.

[07]   Thus, it would be an advancement in the art to develop a method and device to overcome the above-described problems in manipulating documents and data files that are larger than the size of a display on a data processing device.

BRIEF SUMMARY OF THE INVENTION

[08]   In a first embodiment, a data processing device comprises a display screen, a first user input control capable of detecting a direction of user input, and a second user input control capable of detecting a direction of user input. When user input is received through the first user input control, content on the display screen is panned in a

direction responsive to the detected direction of the received user input. When user input is received through the second user input control, content on the display screen is zoomed in or out responsive to the detected direction of the received user input.

[09]   In a second embodiment, there is a method for manipulating content displayed on a display screen of a data processing device. When first user input is received through a first user input control capable of detecting a direction of user input, content on a display screen is panned in a direction responsive to the detected direction of the first user input. When second user input is received through a second user input control capable of detecting a direction of user input, content on the display screen is zoomed in or out responsive to the detected direction of the second user input.

[10]   In some embodiments, the user input controls comprise touch pads. In other embodiments, the user input controls comprise joysticks. In yet other embodiments, the user input controls comprise trackballs.

[11]   In some embodiments, at least one of the controls is a roller wheel.

[12]   In some embodiments, the controls are located on a side of the device other than the side on which the display screen in located. In other embodiments, the controls are approximately located on diametrically opposite sides of the display screen.

[13]   In some embodiments, the controls are located such that, when holding the device with two hands, one on either side of the displayed screen, the user can manipulate one control with her right hand and the other control with her left hand.

BRIEF DESCRIPTION OF THE DRAWINGS

[14]   Figure 1 illustrates a perspective view of the front of a device adapted to perform in accordance with an embodiment of the invention.

[15]   Figure 2 illustrates a rear view of the device shown in FIG. 1.

[16]   Figure 3 illustrates a front view of a device adapted to perform in accordance with an embodiment of the invention.

[17]   Figure 4 illustrates a rear view of the device shown in FIG. 3.

[18]   Figure 5 is a block diagram of an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[19]   The invention provides a method and system for manipulating data files by embedding two controls, such as touch pads, joysticks, and the like, on the back of a handheld device. One of the controls may be used for panning (i.e. scrolling up and down and/or left and right) within a data file, while the other control may simultaneously be used for zooming in and zooming out of the data file as it is displayed on a display screen. Data files include Internet web pages, maps, word processing documents, spreadsheets, .PDF files or any other file that contains data that is interpreted and displayed on a display screen.

[20]   FIG. 1 shows a front view of a handheld device 101 adapted to perform according to an aspect of the invention. The device 101 may be any type of computing device including, but not limited to, a laptop computer, personal digital assistant (PDA), tablet computer, special purpose computing device, mobile telephone, or the like. The handheld device 101 comprises a display screen 103 and control buttons 105, 107, 109, and 111. The display screen 103 may be used for any purpose for which such a device generally uses a display screen.

[21]   FIG. 2 shows a back view of the handheld device 101. When the display screen 103 is being used to manipulate a data file, controls 201 and 203 may be activated. The first control 201 may be used for zooming in and out, while the second control 203 may be used for panning. Obviously, their functions may be reversed. The controls 201 and 203 may be any of various known control types, including but not limited to, touch pads, joysticks, roller wheels, trackballs, and the like, as are known in the art. Any control that may allow a user to scroll in two dimensions or zoom in and out on a

display screen may be used. For purposes of illustration, the controls shown in FIG. 2 and used in examples herein are touch pads.

[22] Control 201 may be manipulated by a user to perform zooming in and zooming out of a document that is presently displayed on the display screen 103. When the user places her finger on the zooming pad 201 and moves it around, the image on the display zooms in and out. The zooming may take place smoothly, with very little differentiation between zoom levels, or the zooming may take place in larger steps. The smooth zooming method is such in which the steps of zoom are not fixed, but the zoom-ratio may be any permanent or temporary value between maximum and minimum values. If the maximum and minimum values are temporary, several network entities such as a terminal manufacturer's server connected to the Internet or other network may define the values. The minimum and maximum values may alternatively be part of the content application. The values may also be received prior or during the content delivery. The zoom increment may also optionally be set by the user through a preferences screen, as is known in the art.

[23] Horizontal and/or vertical input may be used to perform zooming of the display screen. This may also be a user-defined option, or it may be predetermined. Smooth zooming is known in the art, and may be performed using Pad++ software, referred to above, or using an application specific integrated circuit for zooming, such as an ASI 320/321 available from Aurora Systems, Inc., located in San Jose, California.

[24] For instance, if a user moves her finger from left to right on the zoom control 201, the display may zoom in. If the user moves her finger right to left, the display may zoom out. Alternatively, the directions of input movement may be reversed with respect to the resultant zoom direction. In addition, vertical movement up and down may be used to perform zooming. If the user moves her finger in a downward motion on the control 201, the display may zoom in. If the user moves her finger in an upward motion on the control 201, the display may zoom out. This also may be reversed. Finally, it is also possible that horizontal and vertical input are used simultaneously to perform zooming. For instance, if the user moves her finger in either an upward or

left to right motion on the control 201, the display may zoom in, while if the user moves her finger in a downward or right to left motion on the control 201, the display may zoom out. These directions may also be reversed.

[25] Using the zoom pad 201, a user can zoom far out of the document to see the whole information space at once. That is, the entire data file may be viewed on the display screen 103. This helps the user to see the structure or layout of the entire document. Also, the user may zoom close in to see more intricate details of the document. Obviously, anything in-between these two extremes is also possible. Ideally, smooth zooming (i.e. very little differentiation between zoom levels) should be used. Smooth zooming helps a user to keep track of the document's structure and layout, as well as the relative position of the document on the display. Additionally, smooth zooming adds a simulated third dimension, the depth-dimension, to the user interface. In one embodiment the user interface content may be three-dimensional; i.e. objects may be placed at different "depths" in the information space. As the user zooms in on three-dimensional content, new content that was not visible (or even suggested) when zoomed out appears on the display screen as the user zooms in. Alternatively, the content may remain three-dimensional, where content merely gets larger as the user zooms in.

[26] In embodiments where content is three-dimensional, content may be defined such that specified content may only appear when the display is in a predetermined range of zoom levels. Thus, different pieces of content may come into view and pass out of view at various zoom levels, providing a simulated three-dimensional effect.

[27] The second pad 203 may be used for panning. As with zooming, the panning increment may be smooth or stepped, optionally determined by the user, or as described with respect to zooming, above. As a default panning may be set to be smooth. When the user moves her finger around on the panning touch pad 203, the content on the display screen moves responsive to the direction in which the user moves her finger. That is, the device may be set to move the display screen content in the same or opposite direction as the user's finger. This may be determined by the

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user, or preset within the device. This navigational technique provides an intuitive interface to the user, as the touch pad may be located behind the display. Thus, the user may interact with the display as if she is moving a physical object with her finger.

[28] Often documents are longer than the height of the display screen as well as wider than the width of the display screen. In such instances panning may take place in two dimensions, both horizontal and vertical (or any combination of these). This is especially the case when the user has zoomed in on a document. In such instances, the user may pan the display horizontally and vertically. In one embodiment, the horizontal component of the user's input on the control pad 203 pans the display horizontally. Likewise, the vertical component of the user's input on the control pad 203 pans the display vertically. Obviously, if the document is only wider than the display screen but not longer, then panning may only take place horizontally. Likewise, if the document is longer than the screen but not wider, then panning may only take place vertically.

[29] By providing controls that may be independently manipulated, the device may perform zooming and panning simultaneously in response to user input. This allows the user to more effectively control zooming operations. For instance, when zooming in on a document with one hand, the user may use the other hand for corrective "steering" of the document by panning in a direction toward the portion of the display to which the user is zooming. This is especially useful when zooming-in, where the user may otherwise easily get disoriented by zooming in on the incorrect portion of the document.

[30] The above-described dual control system is especially suitable for handheld computing devices. By using the inventive dual control system, larger amounts of information may easily be shown on a small display screen because the user may more easily manipulate the information on the display to find that which she is looking for. Additionally, by placing the dual controls on a side of the device other than the side on which the display screen is located, the display screen may be made

larger than it otherwise could because it is not competing for space on the handheld device with the dual controls.

[31] While FIGS. 1 and 2 illustrate one embodiment of a handheld device, other embodiments are also possible. For instance, the dual controls 201 and 203 in FIGS. 1 and 2 are shown on a side of the handheld opposite that of the display screen, such that a user using her fingers may manipulate the controls 201 and 203 when gripping the device with two hands, one from each side. This configuration allows for efficient, ergonomic use of the device by the user.

[32] Alternatively, as shown in FIG. 3, the controls 201 and 203 may be placed on either side of the display screen, but on the same side of the device as the display screen, such that a user may manipulate the controls 201 and 203 using her thumbs. In such an embodiment, shown in FIG. 4, control buttons 105, 107, 109, and 111, or any subset or superset thereof, may optionally be placed on the opposite side of the device or in any other suitable location, such that the user may manipulate the control buttons with her fingers when gripping the device with two hands, one on either side.

[33] As stated above, instead of touch pads, controls 201 and 203 may comprise a roller wheel, a trackball, a joystick, a control button (such as +, - or multi stage + and - buttons) or any combination of the above alternatives, such as is shown in FIG. 3. In FIG. 3, zoom control 201 is a roller wheel, while pan control 203 is a trackball. Any other type of known user input device might alternatively be used such that it is capable of allowing a user to input scroll and/or pan commands to the device.

[34] FIG. 5 illustrates a block diagram of the device 101 according to an embodiment of the invention. The device 101 includes a processor 503, a display element 103, a display memory 507, a TX/RX circuit 509, zoom circuit 511, zoom input control 201, pan circuit 513, pan input control 203, stepping circuit 515, stepping control 517, and working memory 519. Processor 503 controls the overall operation of the device 101. TX/RX circuit 509 is used to send and receive data to and from an external data source. Display memory 507 controls the content that is displayed on the display element 103. Working memory 519 stores any software and data necessary to

perform panning and zooming in accordance with the invention. The working memory 519 may comprise volatile memory, non-volatile memory, or any combination of the two. The zoom input control 201 and pan input control 203 may include any of the above-recited input controls, such as touch pads, roller wheels, trackballs, joysticks, keypad buttons, and the like.

[35]   Zoom input control 201 receives input from a user and sends the user input to the zoom circuit 511. Zoom circuit 511 modifies the zoom level of the display 103 responsive to the received input by sending zoom information to the display memory 517. Pan input control 203 receives input from a user and sends the user input to the pan circuit 513. Pan circuit 513 pans content on the display 103 responsive to the received input by sending pan information to the display memory 517.

[36]   Step control 517 receives input from a user and sends the user input to the stepping circuit 515. Stepping circuit 515 modifies the zoom or pan step increment responsive to the received input, and sends the modified step increment information to either the zoom circuit 511 or the pan circuit 513, as appropriate. The step control 517 may comprise two separate controls, one for zoom step level and one for pan step level. Alternatively, the step control 517 may be implemented in software via a preferences menu on the display screen, such that the user may manipulate the zoom step level and the pan step level without necessitating physical controls on the device 101 in addition to the zoom touch pad 201 and the pan touch pad 203.

[37]   Instructions to allow the device 101 to perform panning and zooming as described above may be stored as computer readable instructions on a computer readable device, such as ROM, RAM, hard disk, removable storage, or the like. Alternatively, the instructions may be embedded in hardware and/or firmware within the device 101. Panning and zooming may be performed according to known panning and zooming techniques in the art.

[38]   While the invention has been described with respect to specific examples including presently preferred modes of carrying out the invention, those skilled in the art will appreciate that there are numerous variations and permutations of the above described

systems and techniques that fall within the spirit and scope of the invention as set forth in the appended claims.

I/We Claim:

1.   A handheld device, comprising:

a housing;

a display screen;

a first user input control on the housing, wherein the first user input control detects a direction of first user input; and

a second user input control on the housing, wherein the second user input control detects a direction of second user input;

wherein, when user input is received through the first user input control, content on the display screen is panned in a direction responsive to the detected direction of the first received user input, and

wherein, when user input is received through the second user input control, content on the display screen is zoomed in or out responsive to the detected direction of the second received user input.

2.   The device of claim 1, wherein the display screen is located on a front of the device and the first and second user input controls are located on a back of the device.

3.   The device of claim 1, wherein the controls comprise a touch pad.

4.   The device of claim 1, wherein the controls comprise a trackball.

5.   The device of claim 1, wherein at least one of the controls comprises a roller wheel.

6.   The device of claim 1, wherein the controls comprise a joystick.

7.   The device of claim 1, wherein the controls comprise a keypad button.

8. The device of claim 1, wherein the first and second controls are each located in a position that, when a user is holding the device with both hands on either side of the display screen, enables the user to manipulate one control with the user's right hand and one control with the user's left hand.

9. The device of claim 1, wherein the controls are located on a same face of the device as the display screen and on approximately opposite sides of the display screen.

10. A method for manipulating content displayed on a display screen of a handheld device, comprising the steps of:

(i) when first user input is received through a first user input control capable of detecting a direction of user input, panning content on a display screen in a direction responsive to the detected direction of the first user input, and

(ii) when second user input is received through a second user input control capable of detecting a direction of user input, content on the display screen is zoomed in or out responsive to the detected direction of the second user input,

wherein first and second user input controls are located on a housing of the device.

11. The method of claim 10, wherein the display screen is located on a front of the device and the first and second user input controls are located on a back of the device.

12. The method of claim 10, wherein the controls comprise a touch pad.

13. The method of claim 10, wherein the controls comprise a trackball.

14. The method of claim 10, wherein at least one of the controls comprises a roller wheel.

15. The method of claim 10, wherein the controls comprise a joystick.

16. The method of claim 10, wherein the controls comprise a keypad button.

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17. The method of claim 10, wherein the first and second controls are each located in a position that, when a user is holding the device with both hands on either side of the display screen, enables the user to manipulate one control with the user's right hand and one control with the user's left hand.

18. The method of claim 10, wherein the display screen is located on a front portion of the device and the first and second user input controls are located on a back potion of the device.

19. A handheld device, comprising:

a housing;

a display screen on a front portion of the housing;

a first touch pad attached to a back portion of the housing; and

a second touch pad attached to a back portion of the housing;

wherein, when first user input is received through the first touch pad, content on the display screen is panned horizontally responsive to a horizontal component of the first received user input, and content on the display screen is panned vertically responsive to a vertical component of the first received user input,

wherein, when second user input is received through the second touch pad, content on the display screen is zoomed responsive to at least one of a horizontal component and a vertical component of the received second user input.

20. A device, comprising:

a processor;

a display memory communicatively coupled to the processor;

a display element communicatively coupled to the display memory;

a zoom circuit communicatively coupled to the display memory;

a zoom touch pad communicatively coupled to the zoom circuit, wherein the zoom touch pad receives zoom input from a user and transmits the zoom input to the zoom circuit;

a pan circuit communicatively coupled to the display memory; and

a pan touch pad communicatively coupled to the pan circuit, wherein the pan touch pad receives pan input from the user and transmits the pan input to the pan circuit,

wherein the zoom circuit sends zoom information to the display memory responsive to the received zoom input, and the pan circuit sends pan information to the display memory responsive to the received pan input; and

wherein the display memory zooms content on the display element responsive to the received zoom information, and the display memory pans content on the display element responsive to the received pan information.

ZOOMING AND PANNING CONTENT ON A DISPLAY SCREEN

Abstract of the Invention

A method and system for manipulating content displayed on a display screen is disclosed. A data processing device has two attached user input controls, such as touch pads, joysticks, and the like. One of the controls may be used for panning (i.e. scrolling up and down and/or left and right) content on the display screen, while the other control may simultaneously be used for zooming in and zooming out of content as it is displayed on the display screen. The zoom and pan increment levels may be smooth or stepped, depending on a user preference, to aid in navigation of the content displayed on the display screen.
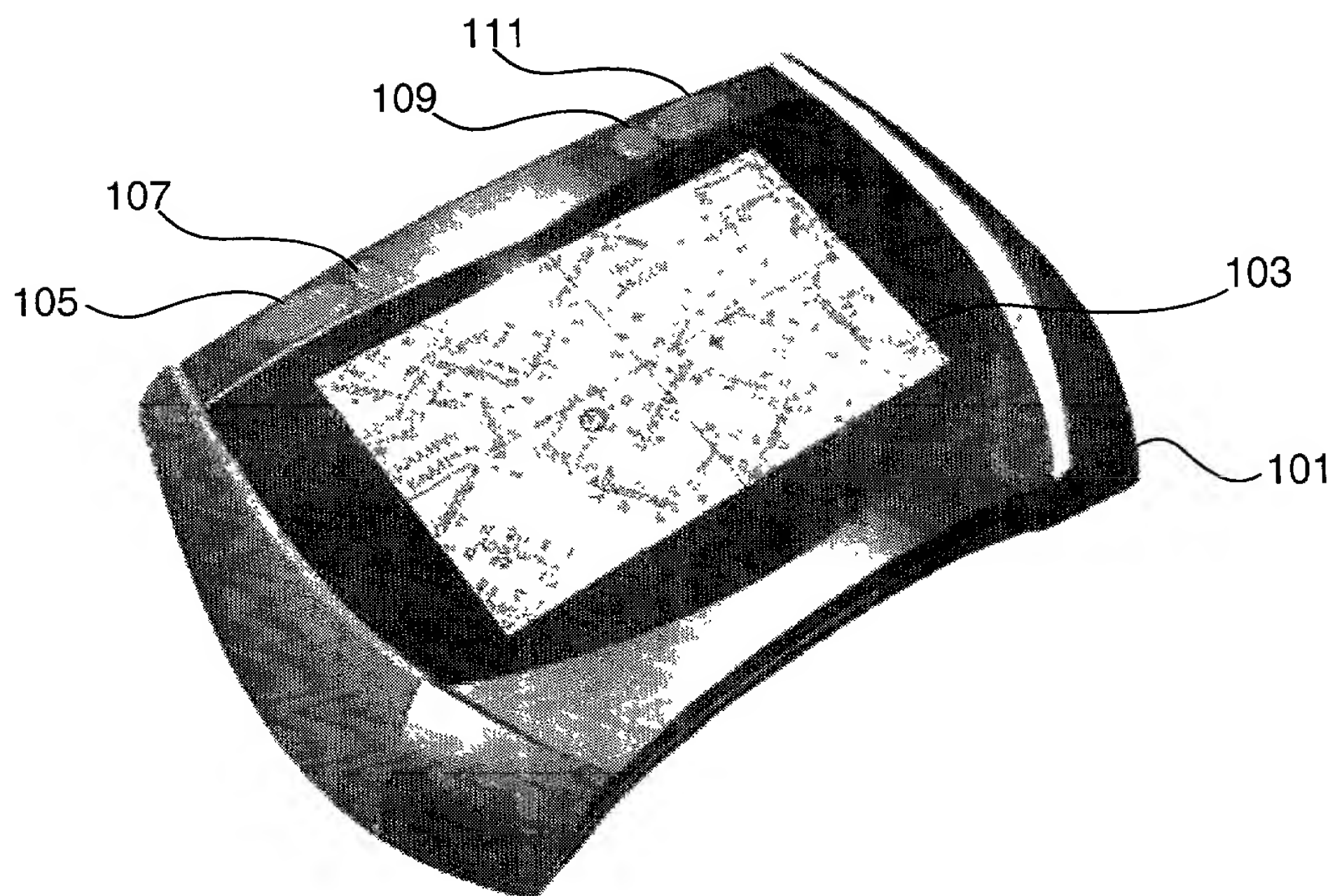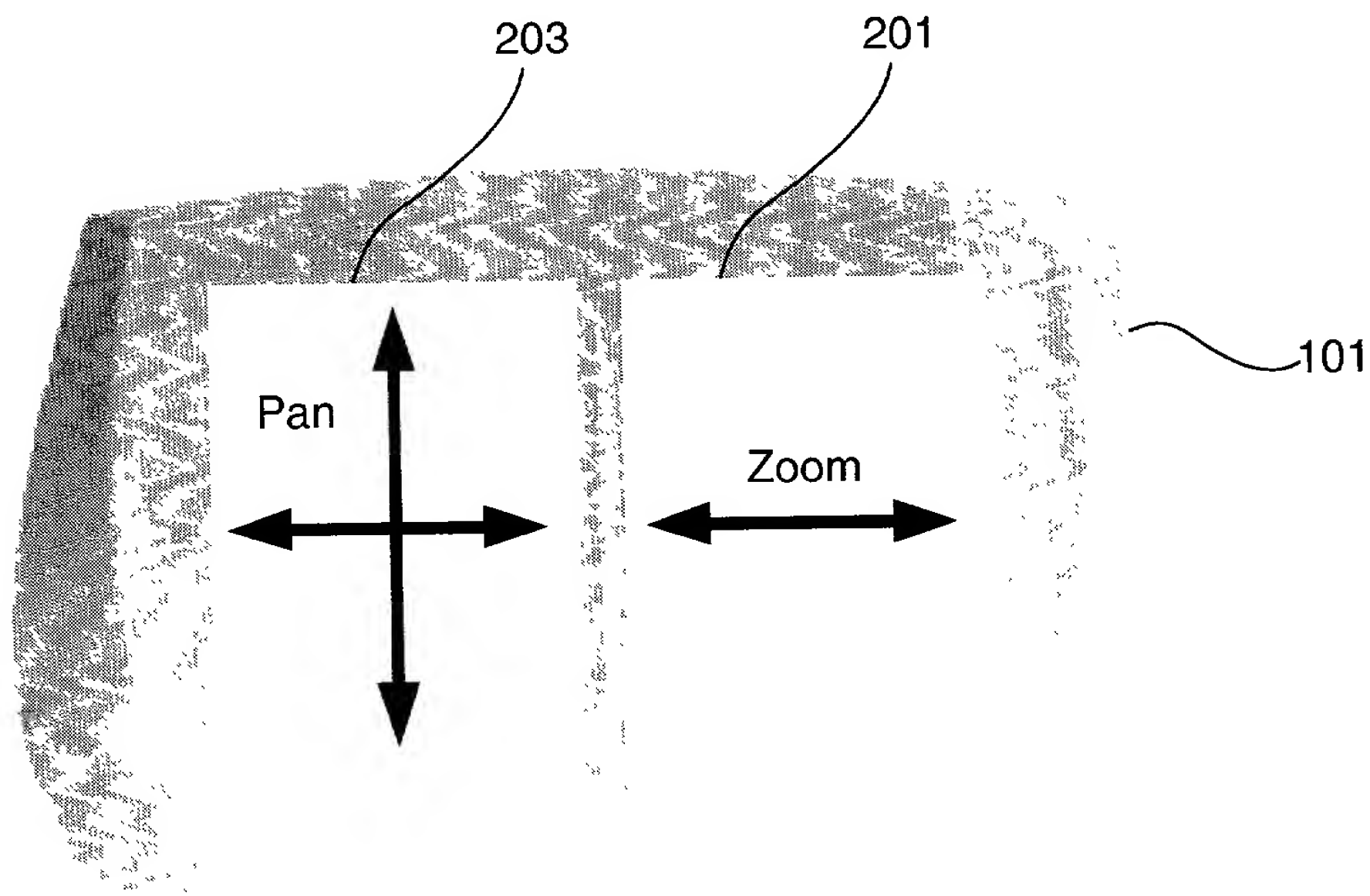
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FIG. 1

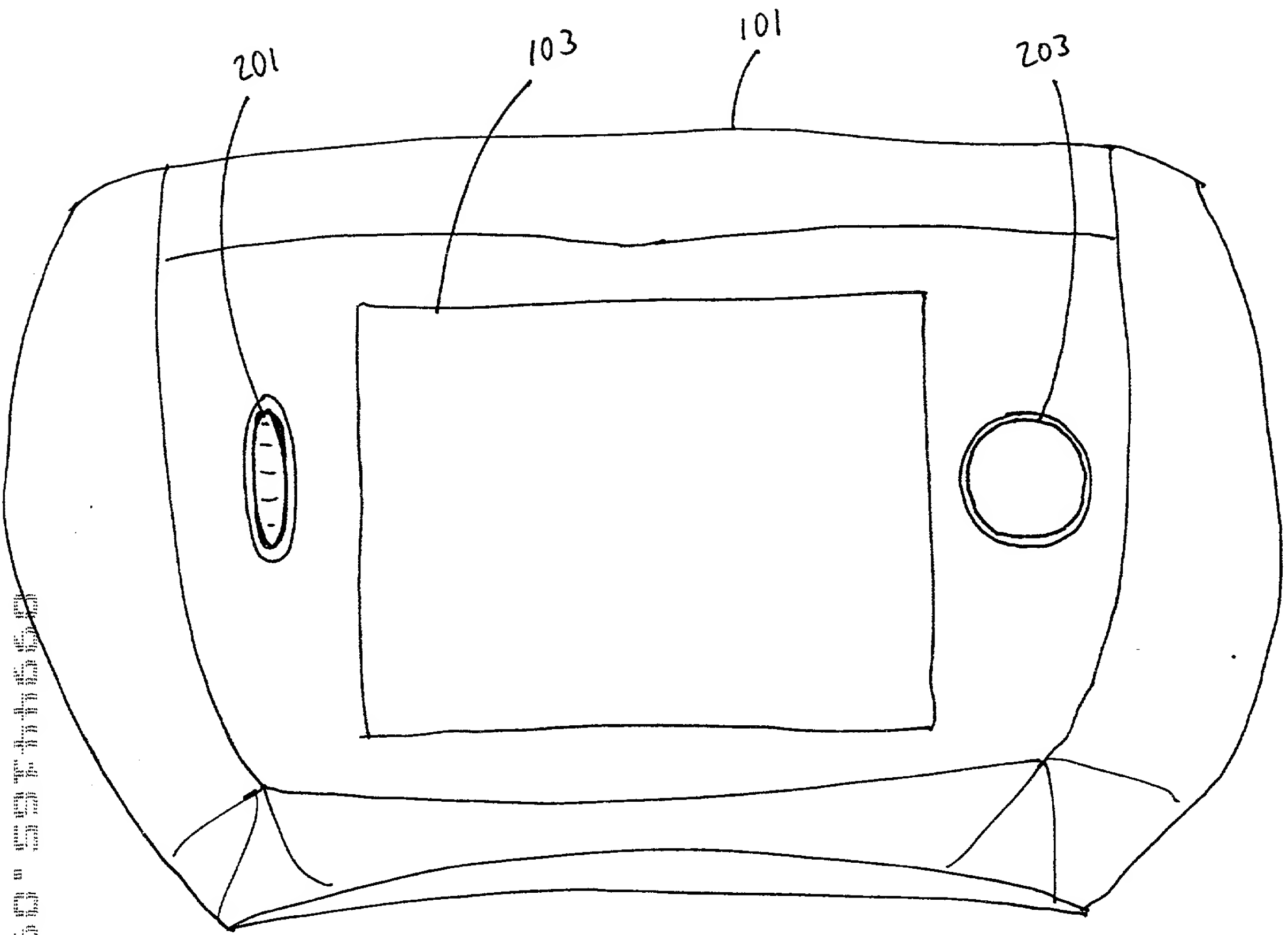**FIG. 2**
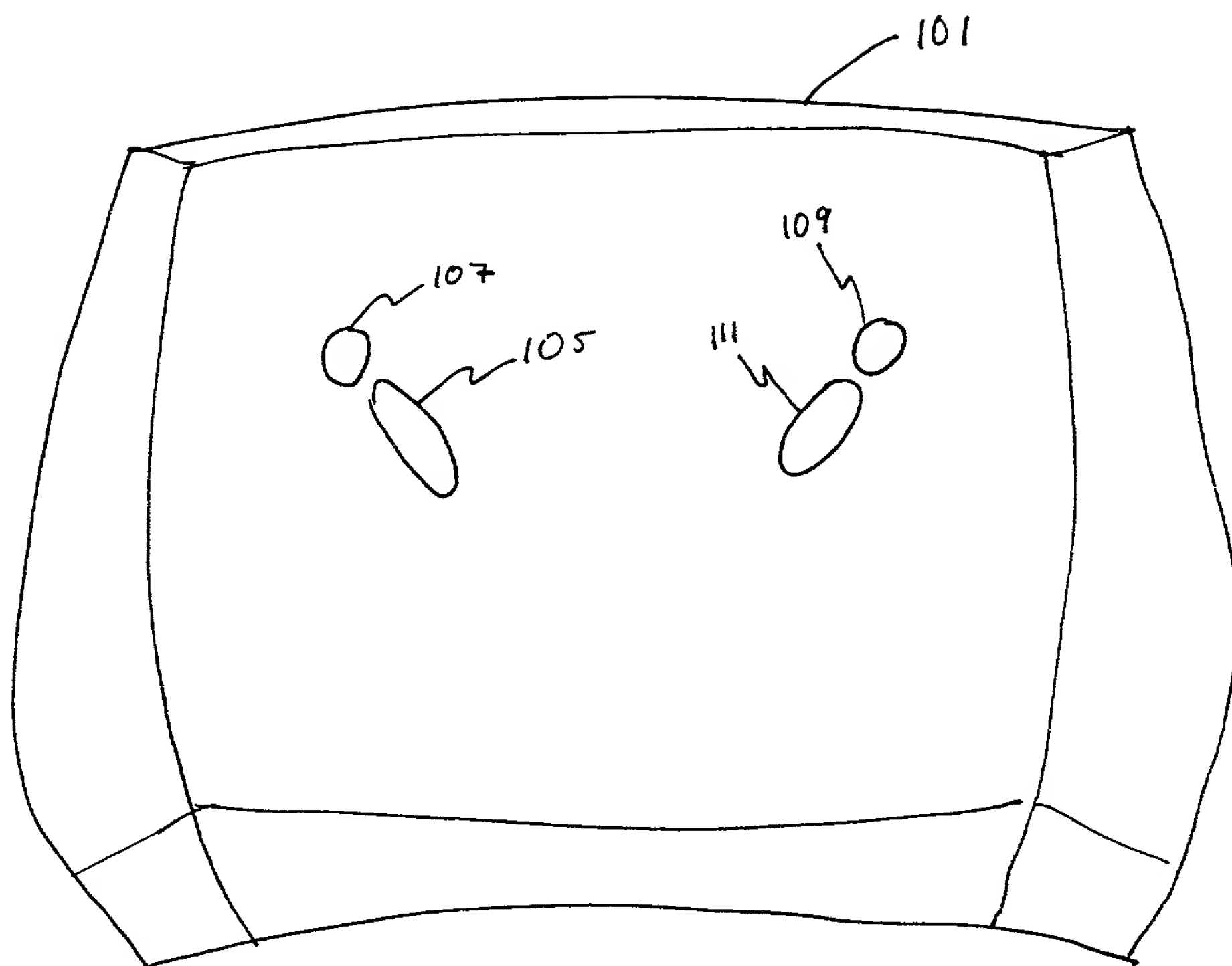
201   103   101   203

FIG.3

101

109

107

105

111

FIG. 4
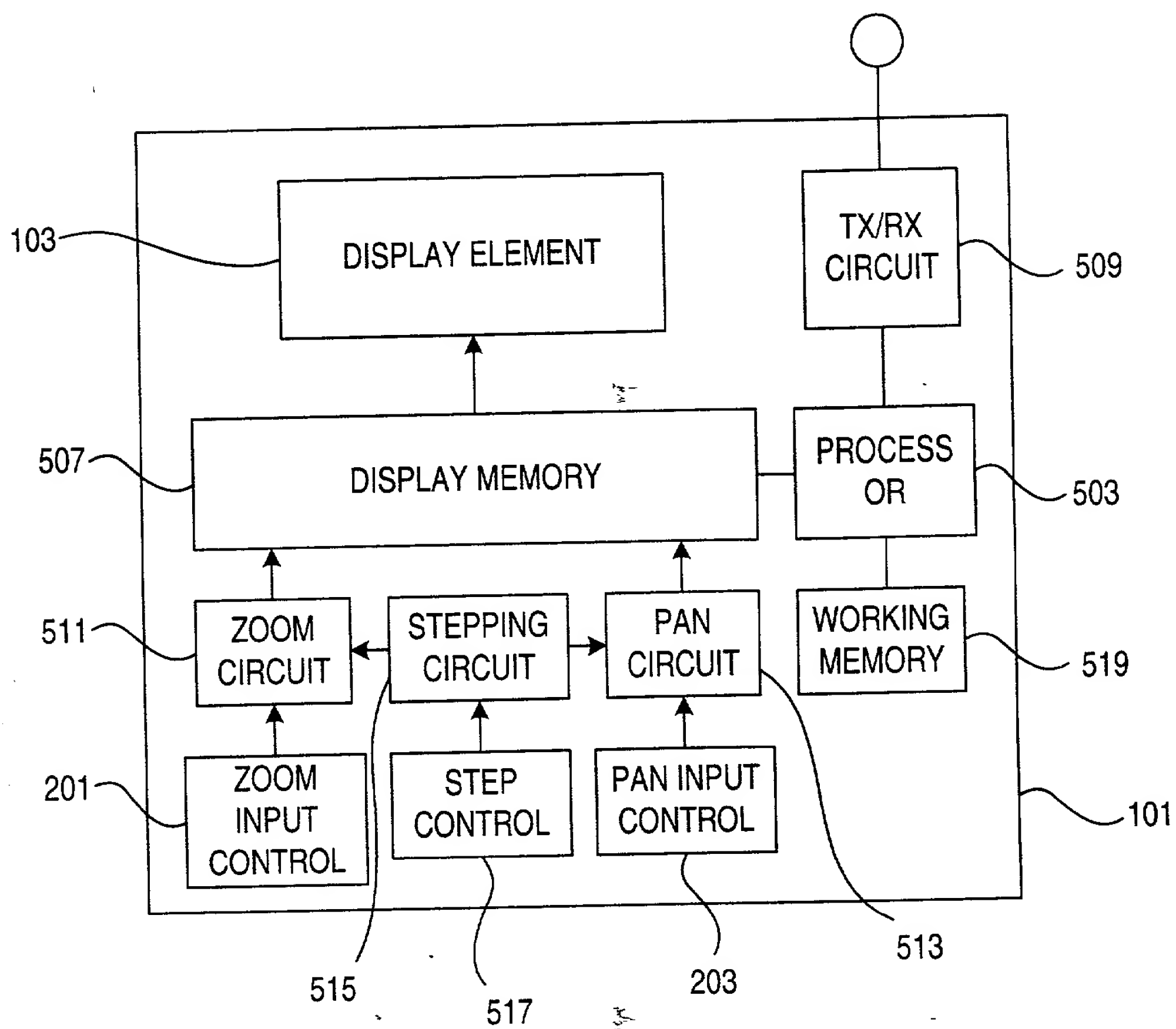
FIG. 5

JOINT DECLARATION FOR PATENT APPLICATION

As the below named inventors, we hereby declare that:

Our residence, post office address and citizenship are as stated below next to our names;

We believe we are the original, first and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled **ZOOMING AND PANNING CONTENT ON A DISPLAY SCREEN**, the specification of which:

     X   is attached hereto.

     was filed on _____ as Application Serial Number _____ and was amended on _____ (if applicable).

     was filed under the Patent Cooperation Treaty (PCT) and accorded International Application No. _____, filed _____, and amended on _____ (if any).

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We hereby acknowledge the duty to disclose information which is material to patentability in accordance with Title 37, Code of Federal Regulations, 1.56(a).

Prior Foreign Application(s)

We hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Country	Application No.	Date of Filing (day month year)	Date of Issue (day month year)	Priority Claimed Under 35 U.S.C. 119

Prior United States Provisional Application(s)

We hereby claim priority benefits under Title 35, United States Code, 119(e)(1) of any U.S. provisional application listed below:

U.S. Provisional Application No.	Date of Filing (day month year)	Priority Claimed Under 35 U.S.C. 119(e)(1)

Prior United States Application(s)

We hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, we acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Date of Filing (Day, Month, Year)	Status X Patented, Pending, Abandoned

Power of Attorney

We hereby appoint, both jointly and severally, as our attorneys, all Banner & Witcoff, Ltd. attorneys indicated therein under PTO Customer Number #22907, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office. All correspondence and telephone communications should be addressed to:

<div align="center">

Bradley C. Wright
Banner & Witcoff, Ltd.
Customer Number: 22907
</div>

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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